THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte SHUNPEI YAMAZAKI,
MASAAKI HIROKI and YASUHIKO TAKEMURA

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Appeal No. 97-2020
Application 07/957,107[1]

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HEARD: June 10, 1999

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Before URYNOWICZ, FLEMING and RUGGIERO, ***Administrative Patent Judges***.

FLEMING, ***Administrative Patent Judge***.

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[1] Application for patent filed October 7, 1992.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 2 through 7 and 14 through 16, all of the claims pending in the present application. Claims 1 and 8 through 13 have been cancelled.

This invention relates to a display method for a high gradation displaying operation in an electro-optical display device, such as a plasma display or a vacuum micro-electronic display. The display device is constructed by a plurality of picture elements which are arranged in a matrix form and have driving switching elements. On page 3 of the specification, Appellants disclose that a display which has a switching element at each pixel is called an active matrix display. On pages 3 through 6 of the specification, Appellants describe the problems of providing a creation level for these active displays. On page 6 of the specification, Appellants disclose that their invention solves the described

problems of the conventional gradation displaying systems. Appellants disclose that they overcome the problems by not only varying a pulse width but also a pulse height. Appellants disclose on page 8 of the specification that Figure 3 shows the Appellants' invention

in which the pulse height as well as the pulse width is varied. Appellants disclose on page 9 of the specification that by using the Appellants' method, the Appellants are able to minimize the pulse width by an order of four times that of the conventional systems. Appellants also disclose that the method allows high speed operation and reduced power consumption. Independent claim 14 is reproduced as follows:

> 14. A method of driving an active matrix display with a plurality of gradation levels, wherein the maximum number of gradation level is N_{max} where $N_{max} = (1+2^{1}+ \text{@@@} 2^{k}) I$, k and I each being a natural number, said method comprising the steps of:
>
> providing said active matrix display wherein a plurality of transistors disposed on said on a liquid crystal display respectively drive a plurality of pixels of the display;

inputting into a pixel of said display one or more pulses, each pulse having a pulse height and a pulse duration depending upon a desired gradation level of the display at said pixel,

wherein each of said one or more pulses has a relative pulse duration selected from the group consisting of 1, 2, @@@ 2^k and has a relative pulse height selected from the group con- sisting of 0, 1, 2, @@@ I so that the pulse duration and the pulse height of said pulses are both varied whereby the minimum width of said pulses can be increased.

The Examiner relies on the following references:

De Jule	4,130,777	Dec. 19, 1978
Williams	4,427,978	Jan. 24, 1984

Claims 14 through 16 and 2 through 7 stand rejected provisionally under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 12 of copending application Serial No. 07/957,106. Claims 2 through 7, 14 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art found in the Appellants' specification on pages 1 through 7, and De Jule. Claim 16 stands rejected under 35 U.S.C. § 103 as being unpatentable over the admitted

prior art found in Appellants' specification on pages 1 through 7, De Jule and Williams.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

We will not sustain the rejection of claims 2 through 7 and 14 through 16 under 35 U.S.C. § 103.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings

or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the

invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), ***cert. denied***, 117 S.Ct. 80 (1996) ***citing W. L. Gore & Assoc., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied,*** 469 U.S. 851 (1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." ***Para-Ordnance Mfg.***, 73 F.3d at 1087, 37 USPQ2d at 1239, ***citing W. L. Gore***, 721 F.2d at 1551, 1553, 220 USPQ at 311, 312-313.

On page 6 of the brief, Appellants agree that De Jule states at column 30, lines 5 through 13, that the modulation used in De Jule's display may be amplitude modulation, pulse width modulation, or a combination of both. Appellants argue that there is no motivation based on De Jule or the admitted prior art to combine the references in the manner proposed by the Examiner. Appellants emphasize on page 7 of the brief that De Jule fails to provide a teaching or motivation of using a combination of pulse width and amplitude modulation in an active matrix display.

Appellants further point out that Appellants have not only recognized the problems in regard to active matrix displays, but also have overcome these problems by the use of a combination of pulse width and pulse amplitude modulations.

We note on page 4 of the answer, the Examiner simply states that the reason for the combination of using De Jule's pulse modulation and width modulation is so that gradation of a matrix display could have been achieved by using combined pulse modulation and width modulation in the driving circuit as an alternative of using pulse modulation or width modulation individually by itself. On page 7 of the answer, the Examiner argues that De Jule is a broad teaching of using combined pulse modulation and width modulation. However, the Examiner does not address the fact that De Jule teaches uses of these modulation techniques for a display device that does not have an active switching element at each pixel.

Turning to Appellants' specification, we note on page 2 of the specification that Appellants disclose that the prior art used the optical material itself as the switching element. Appellants state that this type of display device is

called a simple matrix structure. Appellants point out problems which

arise with this type of display device in that optical on/off switching operations are difficult to obtain intermediate brightness or color tone. On page 3 of the specification, Appellants disclose that this problem has been solved in the prior art by installing a switching element at each pixel element of the display device. Appellants state that this type of device is called an active matrix display.

On pages 3 and 4 of the Appellants' specification, Appellants point out the problems of an active display device are that these devices have difficulty in achieving an implementation of the gradation displaying operation. In particular, Appellants disclose that it is not easy to generate a voltage with a resolution of 300 microvolts or less, and such a minute voltage is attenuated by various factors until it reaches a picture element. These factors contain resistance of wirings, resistance of thin film transistors, reduction of the potential of a picture element

due to a parasitic capacitance of the thin film tran- sistors and the like. Appellants further disclose that since these parameters, causing the voltage variation or fluctuation, are different in accordance with an active element of each picture element, the fluctuation of the voltage of the picture

element can be actually suppressed in the range of plus and minus 0.2 volts at a maximum over the whole panel.

On page 7 of the specification, Appellants state that this invention has been implemented to solve the problems described above in a conventional gradation displaying system. Appellants disclose a new type of gradation displaying system which adopts advantages of both a gradation displaying system which is completely dependent on a voltage as shown in Figure 1(A) and a gradation displaying system which is completely dependent on pulse width as shown in Figure 1(B). Appellants further disclose that their system does not require minute voltage control and short speed pulses as pointed out above.

Upon a careful review of De Jule, we find that De Jule is a plasma-sac-type gas-discharge image display panel which does not have an active switching element at each pixel. Thus, De Jule is not concerned with the problem confronted by Appellants. Appellants are concerned with an active matrix display which would have voltage variations or fluctuations due to the different active elements at each picture element as well as the parasitic capacitance due to the active elements at each picture element.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). In addition, the Federal Circuit reasons in ***Para-Ordnance Mfg.,*** 73 F.3d at 1088-89, 37 USPQ2d at 1239-40, that for the determination of

obviousness, the court must answer whether one of ordinary skill in the art who sets out to solve the problem and who had before him in his workshop the prior art, would have been reasonably expected to use the solution that is claimed by the Appellants.

As we had shown above, De Jule is not concerned with the problem of active elements at each pixel. We find that it would not be reasonable to expect the solution of using a combination of pulse width and amplitude modulation as taught by De Jule to solve a problem in a different display device using completely different circuitry. Furthermore, we fail to find that there is any suggestion of the desirability of using the combination of pulse width and amplitude modulation in an active

display device. Thus, we are only left with the Examiner's implied argument that it would be obvious to try. However, obvious to try is not the standard that we must use to determine obviousness under 35 U.S.C. § 103. The use of the obvious to try test ignores problem recognition as an element

of the obviousness inquiry and is improper. ***Gillette Co. v. S.C. Johnson & Son, Inc.***, 919 F.2d 720, 725, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990).

Therefore, we will not sustain the Examiner's rejection of claims 2 through 7, 14 and 15 under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of De Jule. Furthermore, we note that the Examiner relies on the same reasons for combinability in the rejection of claim 16. Therefore, we will not sustain the rejection of claim 16 under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of De Jule and further in view of Williams.

Claims 2 through 7 and 14 through 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 12 of copending application Serial No. 07/957,106. We note that these claims are before this panel in Appeal No. 96-2591. In that appeal, we have determined that we cannot ascertain the

scope of these claims. Thus, because we cannot ascertain the scope of claims 1 and 12 of the above copending application, we find that we are unable to determine whether the rejection under the judicially created doctrine of obviousness-type double patenting is proper. Therefore, at this time, we will not sustain the Examiner's rejection under the obviousness-type double patenting doctrine.

We have not sustained the rejection of claims 2 through 7 and 14 through 16 under 35 U.S.C. § 103 or under the judicially created doctrine of obviousness-type double patenting. Accordingly, the Examiner's decision is reversed.

REVERSED

MICHAEL R. FLEMING)
Administrative Patent Judge)
)
) BOARD OF PATENT
) APPEALS AND
) INTERFERENCES
JOSEPH RUGGIERO)
Administrative Patent Judge)

MRF:psb

URYNOWICZ, ***Administrative Patent Judge***, Dissenting-in-Part:

I agree with the majority that the rejection of claims 2-7 and 14-16 under the judicially created doctrine of obviousness-type double patenting should not be sustained. However, the examiner's decision to reject claims 2-7 and 14-16 over the admitted prior art in view of De Jule should be affirmed.

I am of the opinion that the combined prior art evidences a ***prima facie*** case of obviousness which the appellants have not overcome with argument or evidence. Only arguments actually made by appellants should be considered in this decision. 37 CFR § 1.192(a).

The examiner has pointed out the teachings of the admitted prior art and the De Jule reference. He has indicated which teachings of the admitted prior art and De Jule, considered as a whole, render the claims obvious. The prior art is from the same field of endeavor as appellants

were engaged in, matrix displays, and is concerned with methods of driving matrix displays. The admitted prior art is evidence that appellants neither invented active matrix displays nor the method of driving such displays with modulated (amplitude) signals. De Jule is

evidence that it was known in the prior art to drive matrix displays with a signal that was both amplitude and width modulated.

One of ordinary skill in the art is presumed to have full knowledge of the prior art in his field of endeavor and the ability to select and utilize knowledge from analogous arts. ***In re Deminski***, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). A conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. ***In re Bosek***, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). To properly combine references, there must have been some teaching, suggestion, or inference in the references, or knowledge

generally available to one of ordinary skill in the art, that would have led one to combine the relevant teachings. ***Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.***, 776 F.2d 281, 297 n.24, 227 USPQ 657, 667 n.24 (Fed. Cir. 1985), ***cert. denied***, 475 U.S. 1017 (1986).

Here, knowledge by the person of ordinary skill in the art would have included an awareness that the three drive methods of De Jule (those including amplitude modulation, width modulation and a combination of both) were different, and

that each would have provided its own distinct operating characteristics for matrix displays, with inherent advantages and disadvantages. That person would have been motivated to combine the above teaching of De Jule to the admitted prior art to overcome disadvantages of the purely amplitude modulated system of the admitted prior art and/or to benefit from the one or more advantages to be realized by utilizing De Jule's combined amplitude and width modulated drive signals with a matrix display. It is a self-evident proposition that

mankind, in particular, inventors, strive to improve that which already exists. ***Pro-Mold and Tool Co. v. Great Lakes Plastics, Inc.***, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629-30 (Fed. Cir. 1996).

Appellants' argument that a suggestion to modify the prior art to produce the claimed invention is not expressly stated in the art applied against the claims is unpersuasive. An express suggestion is not necessary. ***B.F. Goodrich Co. v. Aircraft Braking Sys. Corp.***, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996). Appellants' other argument, that the prior art is silent with respect to the problem which is addressed in its invention is also unpersuasive. The law does not require that references be combined for the reason

contemplated by the inventor. ***In re Beattie***, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992). Lastly, appellants have not established that one of ordinary skill in the art, after reading (1) De Jule and its teaching of utilizing amplitude modulated signals, width modulated signals, and a combination of amplitude and width modulated

signals to drive matrix displays and (2) the admitted prior art with its teaching of driving active matrix displays with amplitude modulated signals, would have been led in a direction away from the path taken by appellants. ***In re Gurley***, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).

Whereas the examiner established a ***prima facie*** case of obviousness which has not been rebutted by argument or evidence, the rejection should be sustained.

STANLEY M. URYNOWICZ, JR.	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
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SMU:psb

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